



ATLANTIC RENDEZVOUS—Swimmers attach a floatation collar to Gemini XII as the prime recovery vessel USS Wasp gets into position to pick up the spacecraft. Gemini XII crewmen James Lovell and Edwin Aldrin were picked up by helicopter and ferried to the deck of the Wasp.

# Gemini XII Flight Closes Out Achievement-Packed Program

A highly-successful Gemini XII mission last week punctuated the Gemini Program story with a final period as the spacecraft splashed down within three miles of the prime recovery vessel. As the Gemini story was

wrapped up, and became a part of manned space flight history, Apollo waited to tell its narrative.

Gemini XII met all mission objectives except that of going to a 400-nm apogee. Ignition of

the Agena's primary Propulsion system was ruled out when insertion telemetry showed that the Agena's main engine turbopump ran overspeed.

The Agena rendezvous vehicle was launched by an Atlas Standard Launch Vehicle at 1:07:58 pm CST November 11. The Agena placed itself into an orbit measuring 159 nm perigee by 163 nm apogee.

The Gemini countdown, meanwhile, went smoothly through crew insertion, hatch closure and the built-in hold at T minus 3 minutes. Liftoff was at 2:46:33 pm CST, and the Gemini Launch Vehicle inserted Gemini XII into an 87 nm by 152 nm orbit.

### 'No-Go' for PPS Burn

Gemini XII crewmen James Lovell and Edwin "Buzz" Aldrin immediately began onboard computations for the M=3 rendezvous with the Agena. Lovell's first docking took place at 4:16 pm CST over the tracking ship *Coastal Sentry* south of Japan.

Since the Agena was "no-go" for the high-apogee primary propulsion system burn, a retrograde burn of 43 fps was made at 7:05:06 ground elapsed time (GET) using the Agena secondary propulsion system to phase the spacecraft orbit to rendezvous with last Saturday's total eclipse of the sun over South America. The orbit of the combined vehicles was changed to 139 nm by 154 nm by the maneuver.

The crew settled down for the first sleep period shortly after the phasing maneuver.

### Racing With Sun

A second eclipse-phasing maneuver was made the following morning at 15:16:18 GET of 15 fps posigrade, and the crew made preparations for making still and motion pictures of the solar eclipse through the spacecraft windows.

Following the eclipse photography, Aldrin made the first of two stand-up extravehicular activities. Hatch opening took place at 19:29:01 GET; closure was two hours 29 minutes later after Aldrin completed several photographic and scientific experiment tasks.

The rest of the day was spent in conducting experiments and operational checks. Fuel cell stack 2B was taken off the line when trouble developed in the system, but the remaining fuel cell stacks provided ample electrical power to complete the mission. Spacecraft attitude

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## Gemini Awards Given In Mid-week Ceremony

Gemini XII crewmen Wednesday met the press in the MSC Auditorium for the post-flight press conference. Following the press conference, crewmen James Lovell and Edwin Aldrin together with a group of MSC, Headquarters and industry Gemini program people flew to the LBJ Ranch in Johnson City for a brief visit with President Johnson.

The group returned to Houston for the formal awards ceremony Wednesday afternoon in the Auditorium.

Receiving the NASA Exceptional Service Medal were Gemini XII crewmen James A. Lovell, Jr., and Edwin E. Aldrin; Col. John G. Albert, USAF-ETR, Osro H. Covington NASA-Goddard and John D.

Hodge MSC.

NASA Distinguished Service Medal: Dr. George E. Mueller OMSF, and Charles W. Mathews MSC.

Outstanding Leadership Medal: Robert F. Thompson MSC, John J. Williams KSC, and Maj. Gen. Vincent G. Huston USAF/ETR.

NASA Exceptional Scientific Achievement Award: James A. Chamberlin MSC.

NASA Public Service Award: John F. Yardley, McDonnell Aircraft Corp., Bastian Hello, Martin Company, Bernhard A. Hohmann, Aerospace Corp., Walter D. Smith, Martin Co., Walter F. Burke, McDonnell, Louis D. Wilson, Aerojet-General, Lawrence A. Smith, Lockheed, William B. Bergen, Martin Co., George M. Bunker, Martin-Marietta, Brig. Gen. Paul T. Cooper, USAF Space Systems Command, Daniel J. Houghton, Lockheed, Roger Lewis, General Dynamics, James S. McDonnell, McDonnell Aircraft, R. I. McKenzie, Aerojet-General, L. Eugene Root, Lockheed Missiles and Space Co., and David S. Lewis, McDonnell Aircraft.

NASA Superior Achievement Award: Arthur W. Vogeley. (Continued on page 8)

### MSC Tops Goal For United Fund

MSC employees came through with 109% of its 1967 United Fund Campaign goal with a total contribution of \$71,909.23. With 98% of the MSC employees taking part in the campaign, this is the fifth consecutive year that MSC has met or exceeded its United Fund goal.

## Test Problems Cause Apollo Flight Reshuffle

NASA last week announced several Apollo-Saturn manned space flight schedule changes because of launch vehicle and spacecraft development problems.

Principal change is the re-scheduling of a manned earth orbital mission, Apollo/Saturn 205 which was planned essentially as a repeat of the first manned Apollo flight—A/S 204.

### Burbank Speaks To ISA Meeting

Paige B. Burbank, chief of the Meteoroid Technology and Optics Branch of the Instrumentation and Electronics Systems Division, will be the featured speaker at the November 30 meeting of the Apollo Section of the Instrument Society of America.



Speaking on meteoroid instrumentation, Burbank will discuss the hazards to be met in the design of spacecraft protection against extraterrestrial debris and the new technologies for making measurements of these hazards.

The ISA program begins at the Holiday Inn with cocktails at 6:15 pm, dinner (\$3.50/person) at 7:15 and the meeting at 8. Non-ISA members are welcome. For reservations, call Lawrence W. Lockwood at HU 8-0850, Ext 3421.

The A/S 204 mission is scheduled in the first quarter of 1967. Under the new 1967 launch schedule, A/S 204 will be followed by A/S 206 which is an unmanned flight of the Apollo spacecraft lunar module.

Then will come a dual launch, (A/S 205/208) in which a manned Apollo command and service module will be launched by an uprated Saturn I. About a day later an unmanned lunar module will be orbited by another uprated Saturn I. The command-service module will rendezvous with the lunar module and the crew will transfer to lunar module, check out its manned operation. The crew will return to the command module for the landing. This mission, formerly designated as A/S 207/208 now will be designated A/S 205/208.

The prime flight crew for the original A/S 205 mission, Walter M. Schirra, Donn F. Eisele, and Walter Cunningham, now become the backup crew for the A/S 204 mission. The former backup crew for 203—James McDivitt, David Scott, and Russell Schweikart,—and the former backup crew for 205—Frank Borman, Thomas Stafford and Michael Collins, now become available for assignment to subsequent Apollo missions.

In addition to the changes in the uprated Saturn/Apollo flight schedule, development problems have also affected the Apollo/Saturn V program. The first

(Continued on page 2)



END-OF-MISSION STOGIES—Cigar smoke filled the air in the Gemini Mission Operations Control Room after Gemini XII splashdown. Relishing the traditional end-of-mission cigars are, left to right, MSC Deputy Director George M. Low, NASA Electronics Research Center Director James C. Elms, MSC Director of Flight Operations Christopher C. Kraft, Jr. and MSC Director Dr. Robert R. Gilruth.

## Visiting Professor



**AEROSPACE SEMINAR**—Apollo Spacecraft Program Office Manager Dr. Joseph Shea chats with Texas A&M aerospace engineering majors David Cohen, left, and Phillip Newton following a senior seminar November 8 at A&M at which Shea was a visiting professor. Shea described the engineering and development problems faced by the Apollo Program.

## Kratovil Earns Law Doctorate

Joseph A. Kratovil, chief, Resources and Management Division, recently received a Doctor of Jurisprudence degree from the Franklin Law School of Capitol University, Columbus, Ohio.

Kratovil, who joined MSC in February 1963, received the doctorate on September 10, 1966 after earning the necessary credits over the last several years. He received a Bachelor of Law degree from Franklin Law School, and a BS degree in mathematics from Western Reserve University in Cleveland. He also studied at the Case Institute of Technology, Cleveland, the University of Biarritz in France, the University of Nebraska and the University of Oklahoma.

Before joining NASA, Kratovil was with North American Aviation Anaheim, California where he was chief of proposals and pricing and manager of con-



tracts and pricing. He also served as pricing administrator with NAA in Columbus, Ohio.

Kratovil is married to the former Mildred Elsie Dort of Cleveland and the couple has two children, Philip James, 16 and Sarah Ann 12. The Kratovils reside in the Memorial area of Houston.

An ardent hunter, Kratovil is also interested in golf. He is a director of the Webster State Bank, Webster, Texas, a member of the National Association of Accountants and an active member of the Rotary Club of the Space Center.

## Saturn V to Shrink During Propellant Load

The huge 365 foot tall Apollo/Saturn V space vehicle intended to place astronauts on the moon will "settle" and contract 10 inches when the 5.5 million pounds of propellant required for the round trip are pumped aboard.

Lucian Bell, who copes with problems like this as chief of the NASA-Marshall Space Flight Center's Saturn V Systems Engineering Office, said the top of the vehicle, if unrestrained, could be expected to sway up to five feet in the ocean's breeze as it awaits tanking.

Bell said rocket engineers are aware of the expected 10 inch "shrinkage" as cryogenic propellants are pumped in. Launch facility service arms extending to the vehicle from the umbilical tower are designed accordingly.

An accumulation of the many manufacturing tolerances built

into the rocket accounts for some of the drop in height. Hundreds of small rivet holes in the thrust structure for example, will "give" somewhat.

But those who know rockets weren't happy about the anticipated swaying, which wind tunnel tests confirmed. The astronauts might have been concerned, too, even though the rocket is designed to take the stresses.

Bell says the real concern was in the area of wind-induced oscillations and engineers have designed a damper system to lessen these effects. These dampers, built at Marshall, will be installed before the initial unmanned Apollo/Saturn V flight next year.

Bell said the phenomenon of wind-induced vibrations in strings and wires, called aeolian tones, has been known for many years.

## Gemini XII

(Continued from page 1)

thrusters No. 2 and 4 also were operating at reduced thrust, thereby causing additional time to be spent in orienting the spacecraft with combinations of maneuver and attitude thrusters.

### Man at Work

Sunday's activities mainly revolved around Aldrin's umbilical EVA. Hatch opening was at 42:46 GET and hatch closing was two hours and nine minutes later. While on the 30-foot umbilical, Aldrin performed measured work tasks at the Agena docking adapter and at a work station in the spacecraft adapter section.

While on umbilical EVA, Aldrin attached the 100-foot tether stowed in the Agena adapter to the Gemini docking bar in preparation for the tethered operations.

### Gravity Gradient

Gemini XII backed out of the Agena docking collar at about 47:37 GET and the gravity gradient appeared to be established by one revolution later. The tether exercise lasted four hours and 17 minutes.

The crew immediately went into preparations for the second standup EVA in which Aldrin jettisoned unused equipment and conducted additional experiments and photography. Hatch-open time was 66:04 GET for a duration of 59 minutes. Total EVA time for the Gemini XII mission was three hours 37 minutes.

The remainder of the day was spent conducting experiments and operational tests.

Tuesday's retrofire took place over Canton Island at 94:00:01 GET, with a normal reentry following. Splash was at 94:34:31 GET (1:21:04 CST). Gemini XII landed about three miles from the prime recovery vessel, the USS *Wasp*, and about four miles from the aiming point. Both crewmen were picked up by helicopter and were welcomed aboard within a half hour after landing. The spacecraft was aboard a little more than an hour after splash.

## Before Chosen Beacon, Canopus Intrigued Poet

In the southern celestial hemisphere, in the constellation Carina, there is a first magnitude star that has become a standard beacon for such space voyagers as Ranger, Surveyor and Lunar Orbiter. The star is Canopus. Its brightness and lack of parallax make it ideal for programming into the guidance and control

systems of planetary and lunar probes for attitude orientation.

Professor Harm Buning of the University of Michigan Department of Aerospace Engineering ran across a poem about Canopus written more than 50 years ago, long before it was chosen as a spaceflight beacon. Professor Buning was kind enough to pass the poem along to the *Roundup*.

### Canopus

*When quacks with pills political would dope us,  
When politics absorbs the livelong day,  
I like to think about the star Canopus,  
So far, so far away.*

*Greatest of visioned suns, they say who list em:  
To weigh it science always must despair.  
Its shell would hold our whole dinged solar system,  
Nor ever know 'twas there.*

*When temporary chairmen utter speeches,  
And frenzied henchmen howl their battle hymns,  
My thoughts float out across the cosmic reaches  
To where Canopus swims.*

*When men are calling names and making faces,  
And all the world's a jungle and ajar,  
I meditate on interstellar spaces  
And smoke a mild seegar.*

*For after one has had about a week of  
The arguments of friends as well as foes,  
A star that has no parallax to speak of  
Conduces to repose.*

Bert Leston Taylor

## Apollo Flight Reshuffle

(Continued from page 1)

Saturn five flight, an unmanned sub-orbital mission has moved from the first to the second quarter of 1967. The second Saturn V flight, also an unmanned mission, has been rescheduled from the first to the second half of 1967. Subsequent Saturn V flights remain unchanged.

Development problems which led to the scheduled changes included:

1. Failure during qualification testing of the water boiler in the Apollo 204 spacecraft environmental control system.

2. Structural failure of the A/S 501 service module fuel tank with resultant complete loss of the service module itself. The cause has been identified as

interaction of methyl alcohol, used in the tank to simulate fuel, and the stressed titanium skin of the tank. Apparently a form of stress corrosion, the phenomenon has been duplicated by placing titanium under stress up to 140,000 psi and exposing it to methanol (methyl alcohol). The destroyed A/S 501 service module will be replaced by the service module previously planned for the A/S 205 mission.

3. Additional delays in the A/S 501 and 502 flights may result from structural cracks which have formed in the hydrogen tank in the S-II (second stage) of the Saturn V launch vehicle which must be analyzed for cause and repaired.

## National Division Fast-Pitch Champs



**DIAMOND ACES**—Top team in the National Division of the 1966 Fast-Pitch MSC Baseball League was the Brown & Root-Northrop team. Front row, left to right, are Bob Keith, Frank Konrath, Carl Nolan, Ronnie Moulder and Curtis Hopper. Back row: Jim Toy, Dick Farr, Doug Lockhart, Jim Campbell, Wayman Brown and Danny Baxter.



**MINIATURE TORNADO**—NASA Ames Research Center scientist Dr. Vernon J. Rossow demonstrates his device for creating tornadoes in the laboratory. Steam injected at the bottom of the plastic housing passes between two electrically-charged wire grids. The steam is aligned into "parallel positively and negatively charged masses of water droplets" and the flow of droplets between the two masses forms a tornado-like high-speed vortex.

## Space Station Studies Under Way at MSFC

The NASA-Marshall Space Flight Center is studying the ways launch vehicle stages and systems may be used as parts of a space station for extended stays in space.

To further this study the Huntsville space installation has

## Talk About a Paper Mill . . .

The MSC Gemini News Center, Nassau Bay Building 6, the focal point for reports on all Gemini flights since Gemini IV, concluded operations on Tuesday, November 15, with an amazing record of reports in the form of transcripts of air/ground and press conference to news media.

Since the start of News Center operations at MSC, the following statistics were amassed during 42 days of manned flights Gemini IV through XII:

**Paper used:** Transcriptions—Air/Ground and Press Conference: 504 cases, or 5,040 reams, or 2,520,000 sheets of paper, or 31,200 pounds of 15.6 tons.

**Laid end to end** the paper ( $8 \times 10\frac{1}{2}$ "") would stretch 5,000 miles.

**Audio Tapes:** An average of 80 tapes recorded daily during flight days.

**Tapes averaged 8 minutes** or a total of 640 minutes of air to ground and PAO commentary recorded daily.

**Length averaged 300 feet per 8 minute tape** or 1,008,000 feet of tape recorded during 42 days of Gemini flight.

In addition, a total of 252,000 feet of tape on pre-launch, post-launch, flight and post-flight conferences was recorded in the News Center Audio-Visual office at Building 6.

asked aerospace firms to submit proposals for a contract to develop analytical techniques which can be used to establish the feasibility of new concepts and unusual configurations of space stations.

The quotations for the study are to be submitted to the Marshall Center by November 28. Title of the study is "Dynamics of an Elastic Space Vehicle."

The chosen firm will develop analyses applying to orbiting space stations with emphasis on the use of the Saturn S-IVB stage, the Apollo spacecraft-lunar module-adaptor and Apollo modules.

One task area in the new study will be an analysis of large flexible structures such as large antennas, mirrors and space stations. Such analysis should include the effect of control forces, aerodynamic and solar pressure, gravity gradient, damping on the motion and stability of extremely large, flexible bodies in space.

Another portion of the research will include a study of the effects of attaching two orbiting structures with a cable. Gemini XI astronauts were the first to tie their spacecraft to another body—an Agena rocket. This research will expand the cable dynamics involved when orbiting craft are connected and artificial gravity is introduced by rotating the combination.

A third task area involves mass transfer dynamics. This part of the study includes the effects of moving men, equipment, propellants and supplies from one part of the platform to another. Two aspects of the transfer are important. The first is the effect of the change in center of mass of the system, and the second concerns the dynamics of the transfer shell.

# Ames Scientist Proposes Method Of Taking Punch out of Tornadoes

An explanation of the tremendous forces that drive tornadoes—a possible "tornado-killing" technique—and a working laboratory model, showing how tornadoes form and how they might be "turned off" were announced last month.

Dr. Vernon J. Rossow, a scientist at NASA's Ames Research Center, near Mountain View, California, described his new approach in a paper at the 12th Weather Radar Conference at the University of Oklahoma in Norman, Oklahoma.

The NASA scientist stressed that despite promising results with an actual "tornado model", so far he has only a theory. A test on an actual tornado will be needed to prove whether his views are correct.

### Electrical Force Theory

Dr. Rossow proposes that tornadoes are caused by electrical forces. The flow of powerful streams of water droplets between positive and negative cloud cells, he suggests, provides the enormous power to drive a tornado.

The scientist's "tornado-killing" proposal calls for use of a 40 mm. cannon to fire many pre-wound wire projectiles at the tornado cloud. This would stretch a thin wire two miles or more between the positive and negative cloud cells.

A lightning bolt would result, neutralizing the two clouds and, in effect, "shorting out" the electric field in the storm clouds which created the tornado.

### Roar From Arcing

Dr. Rossow, who was reared on a farm in Iowa and watched formation of numerous storms, comments that the often-described "freight train roar" of tornadoes is partly electrical noise similar to the crackling sound from many electrical arcs.

To produce miniature four-inch-high tornadoes in his laboratory, he whirls small clouds of steam with an electric field analogous to a storm-cloud field.

The new tornado theory appears to account for all the known characteristics of tornadoes, including the eerie light generated within the whirling column.

Data on tornadoes is hard to come by because of the disruption in human activities they cause.

The researcher spent four years collecting data and doing mathematical analyses of storm cloud forces. His theory is as follows:

### 500 mph Velocity

Tornado vortices (funnels) appear to begin within intensely active storm clouds. Unlike a hurricane, the 400-yard-thick funnel rotates either to the right or left at a maximum velocity of up to 500 mph. After starting in the cloud, the funnel dips down, attempting to attach itself to a solid surface (the earth).

(This dipping-down is a known characteristic of vortices, also seen in jet engine and wind tunnel studies.)

Large electric fields are known to be associated with tornadoes.

The key question has been: What is the source of the tremendous spin velocity of a tornado?

Dr. Rossow eliminated a number of sources, coming finally to electrostatic motor action.

Tornadoes, he says, are produced by two large cloud masses of positive and negative water droplets, parallel to each other about a mile apart within storm cloud regions. (Such positive and negative masses cause lightning.)

If turbulent storm-cloud eddies produce a flow of positively-charged droplets from the positive mass of droplets into the negative mass, this usually forces a second counter flow of negative droplets across to the positive droplet cloud region.

The flow between the two charged regions takes place because the two masses (positive and negative) are mutually attracted.

If these two counter-flowing streams, each moving at up to 500 mph occur side by side and a quarter to a half-mile apart, the result is frequently a tornado.

Water droplets and air between the two counter-flowing streams begin to whirl faster and faster, building up to rotational speeds as high as 500 mph.

The tornado vortex then begins to move in one direction or the other down the corridor between the charged cloud masses in order to get a continuing supply of positive and negative particles. (Local particles neutralize each other as soon as they mix.)

Once started, and if the positive and negative cloud masses are large enough and properly aligned, the tornado whirls until the charged particle supply runs out.

The original vortex imparts its rotational energy to surrounding air and water droplet regions and seeks to attach its end to the earth, with well-known results.

The distance between the cloud and the ground ranges from 2,000 to 5,000 feet. The vortex may go much higher in the cloud. How high is unknown.

To kill a tornado, Dr. Rossow proposes to fire a number of wire-bearing projectiles (spools) through the top of a tornado. One end of the thin .003 inch wire would be anchored by a small parachute. The wire would unroll from the spool, pass between the positive and negative cloud masses, and trigger an immediate discharge (lightning bolt), neutralizing the charge between the two masses and stopping the tornado by removing its energy source. The lightning charge cannot jump the gap of a mile between the charged masses in a cloud without a wire to start it.

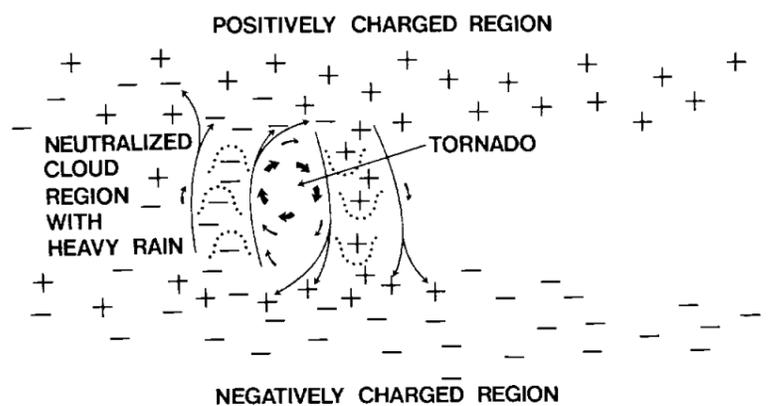
Light observed in tornadoes comes from the tiny sparks emitted as each positive droplet meets a negative droplet.

### Tempest in a Laboratory

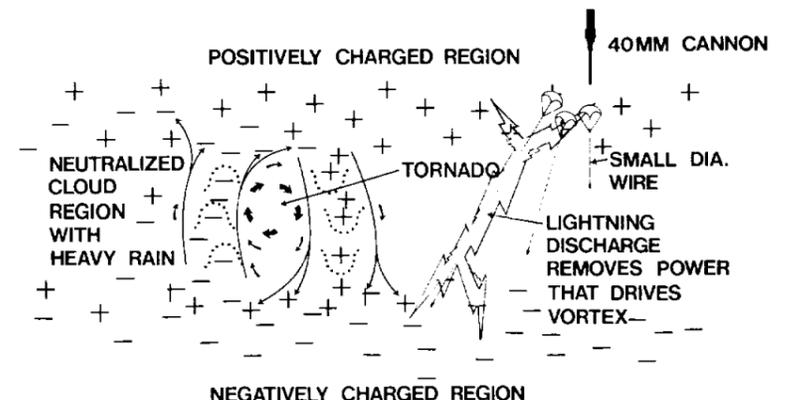
In his laboratory, the Ames scientist uses a steam jet and two parallel grids that can be charged with electricity at 20,000 volts. When current is switched on, and steam is flowing from the jet, the grids produce positive and negative droplet masses and a water droplet vortex immediately appears. It spins very fast until the power is switched off, when it stops abruptly. The power would be switched off in a real tornado by neutralizing the two charged masses.

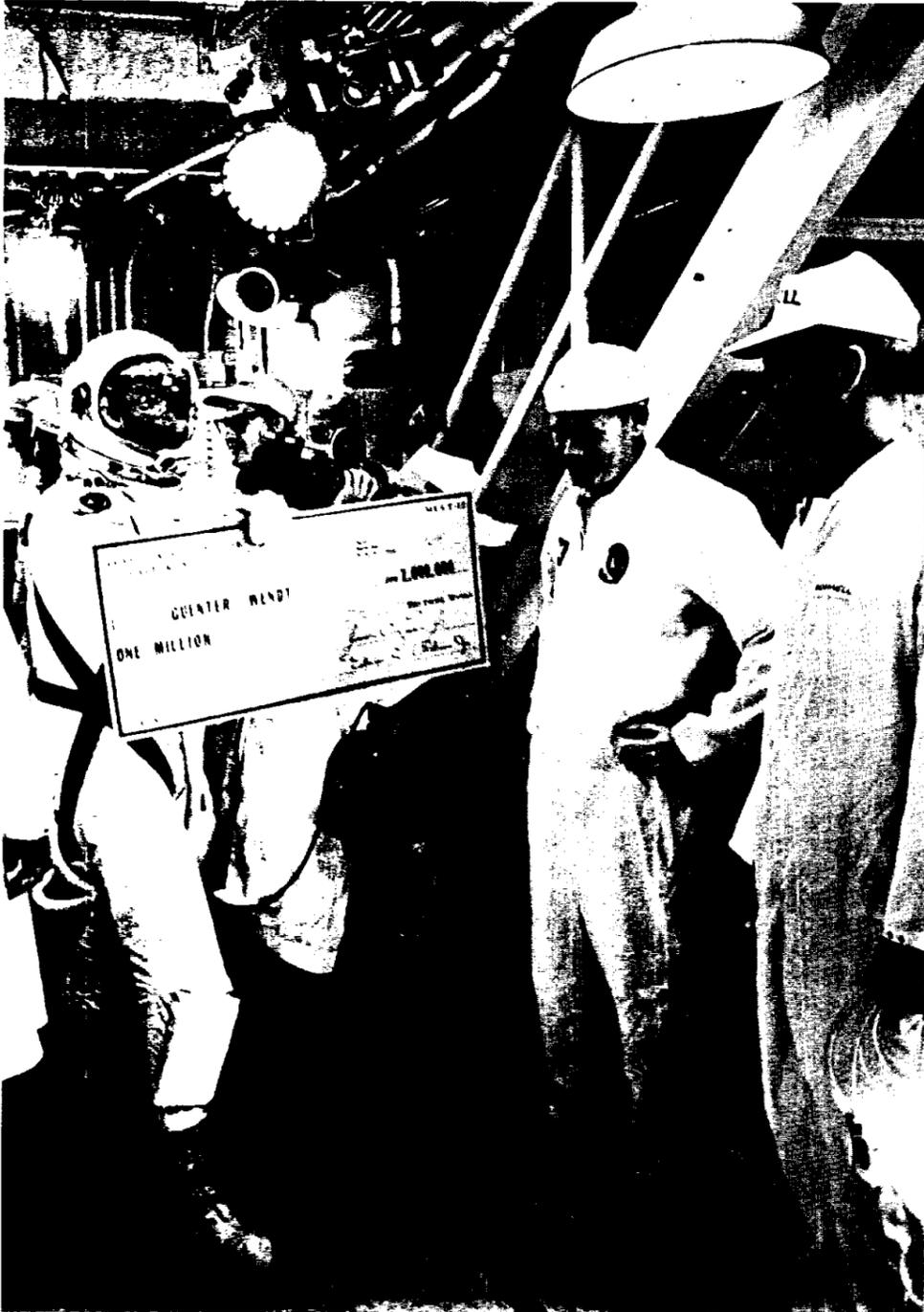
Dr. Rossow is a fluid mechanist. He came to tornado analysis through magnetohydrodynamic work, the study of electrical and magnetic forces on fluids.

### HOW TORNADES ARE FORMED

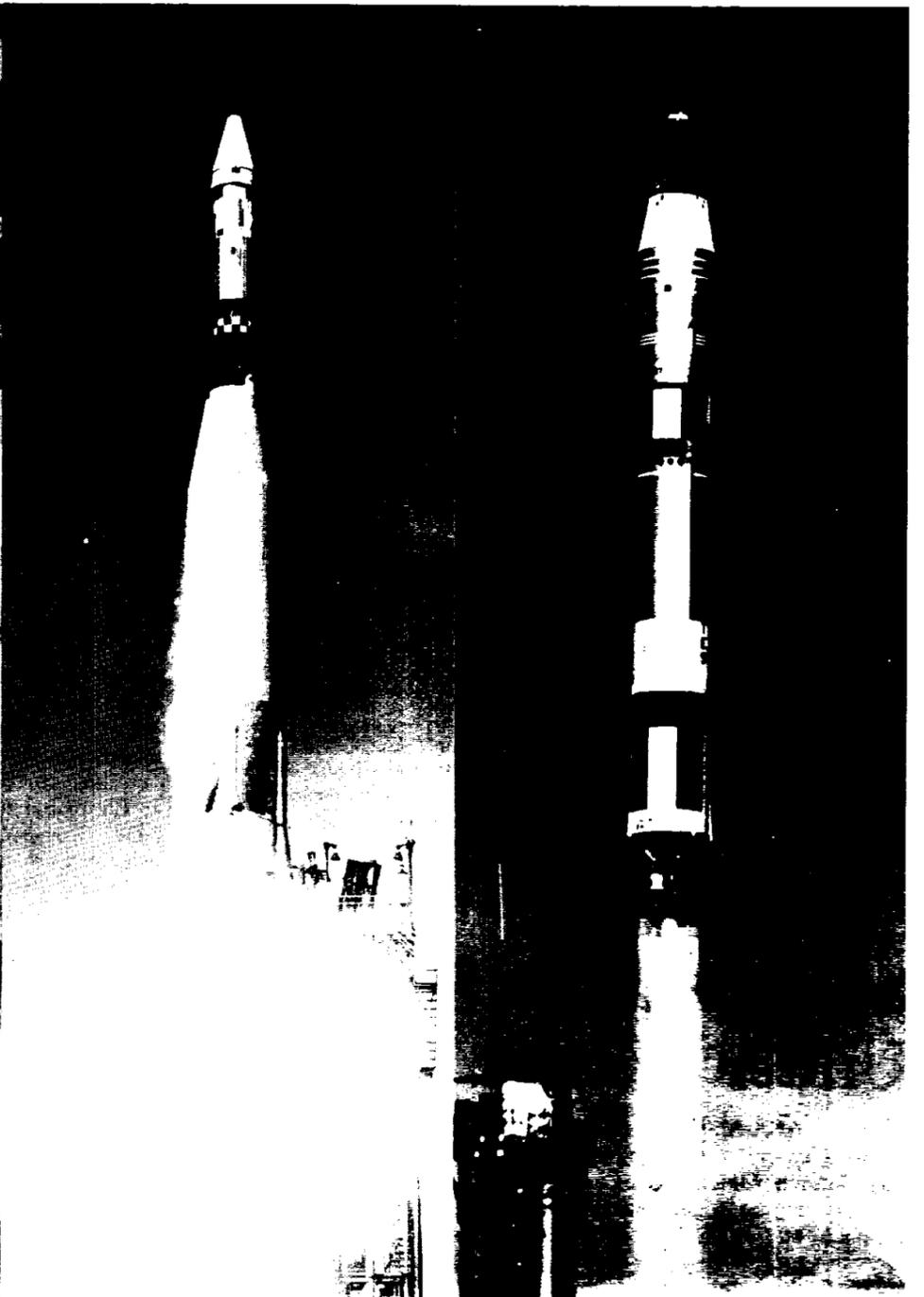


### HOW TORNADES COULD BE "KILLED"





Levity in the White Room . . .



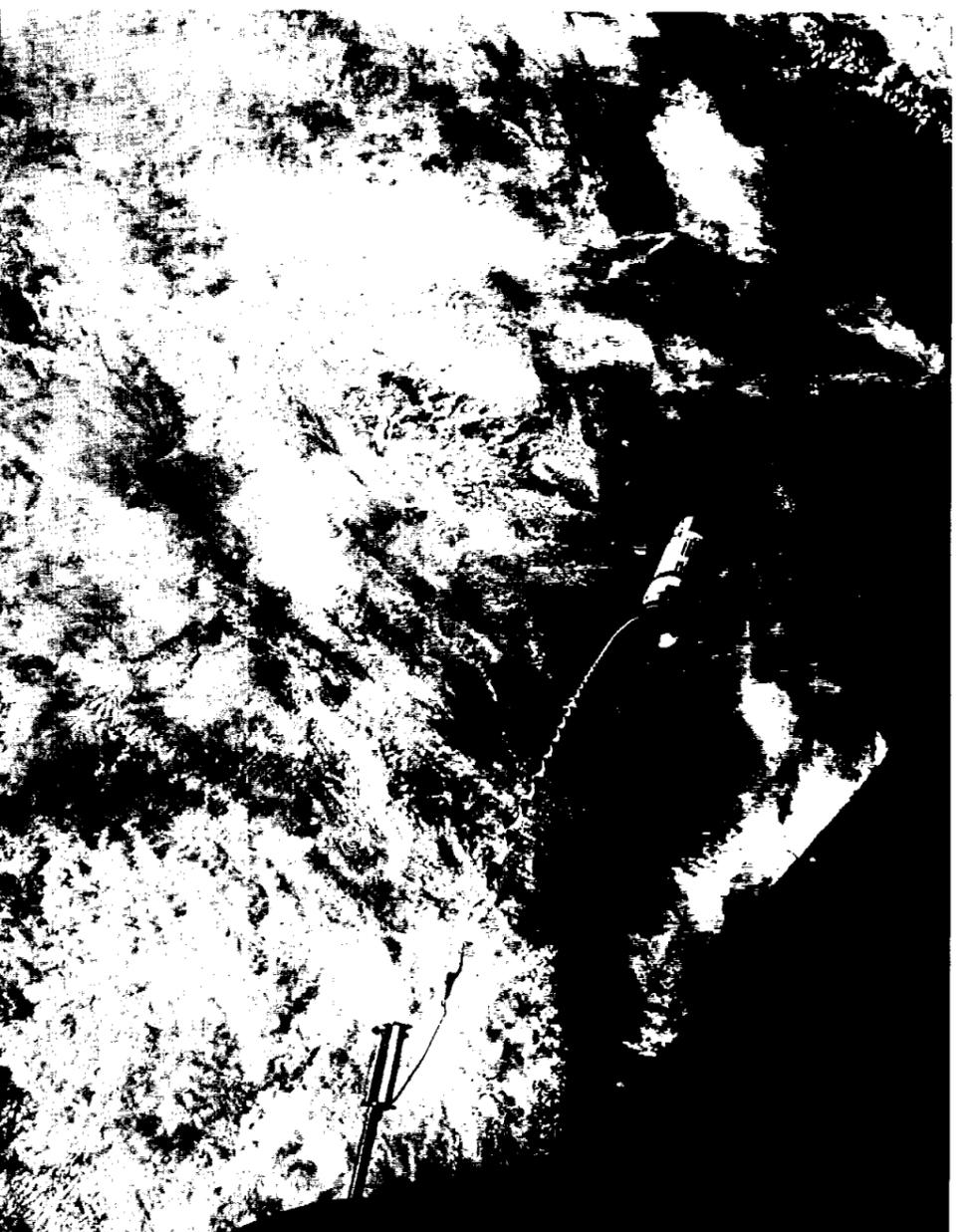
. . . before the dual launch . . .



. . . and a race with the Sun.



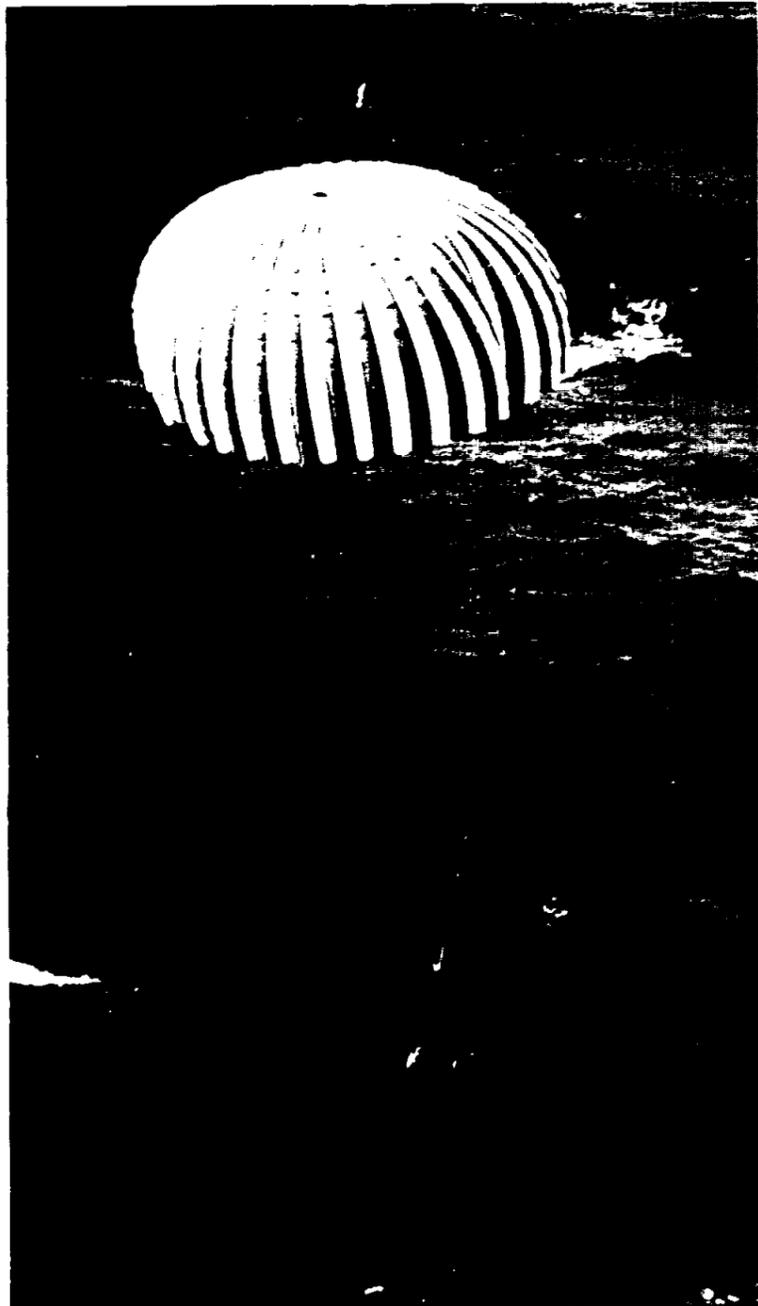
Aldrin EVAed three times . . .



. . . and gravity gradient was established.



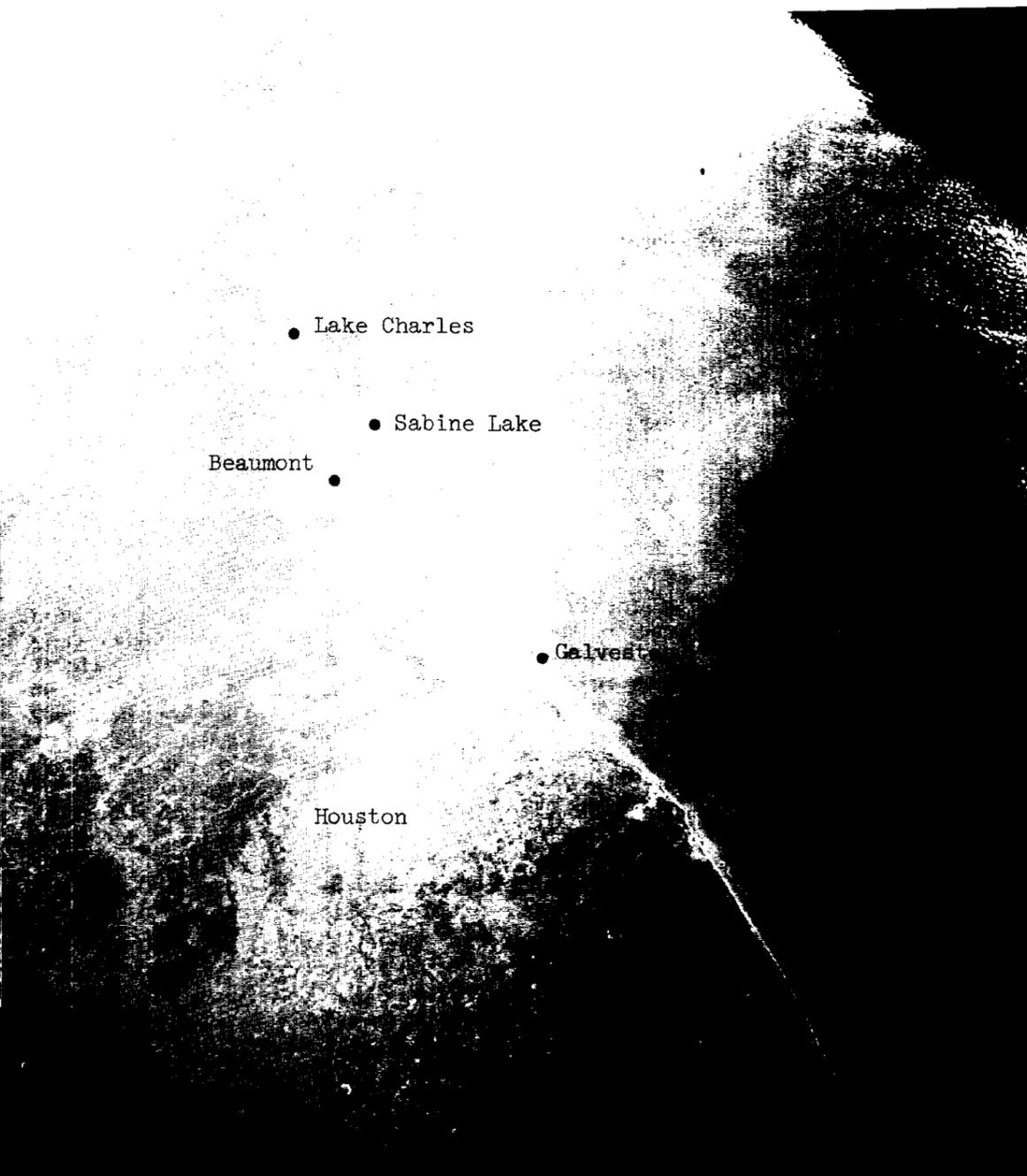
# Last Gemini Brings Lunar Surface A Step Closer



Another on-target landing.

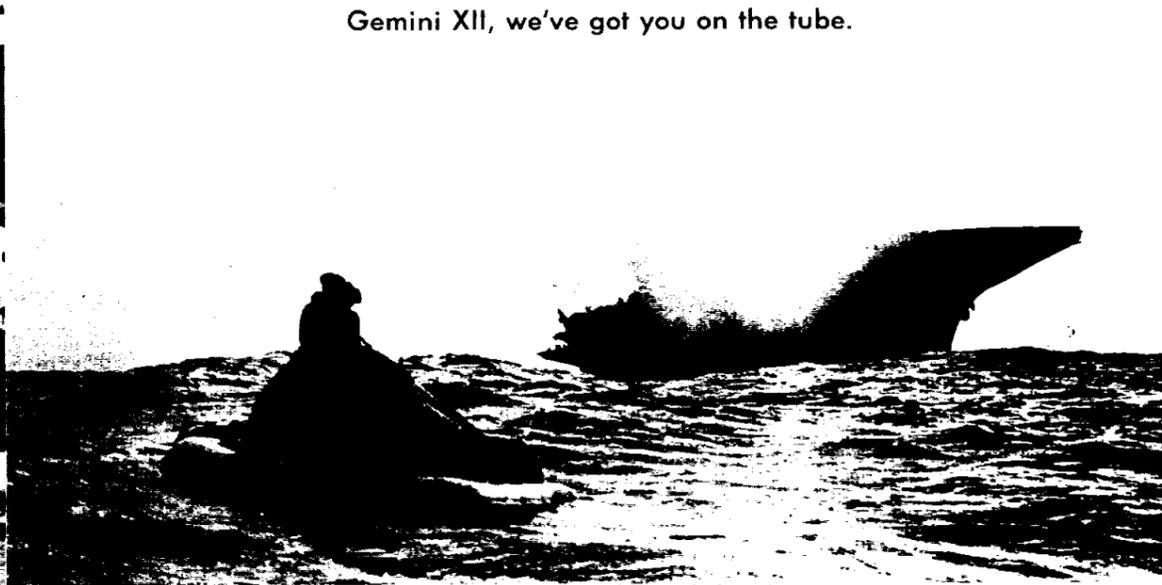


The Wasp rolls out the red carpet . . .



Smile down there! And the kids are on the roof again.

Gemini XII, we've got you on the tube.



. . . and recovers the last of the Geminis.

## OUT OF TEXAS' PAST—

## Father Augustine's Poverty War Helped Civil-War Houston's Poor

Augustine D'Asti was the St. Nicholas of Houston.

Both figures are obscured by legend, hearsay and the smaze of time: but the Texan less so than the Bishop of Myra, possibly because he lived more recently. This year of 1966 is the centenary of Father Augustine's death.

There are other parallels. Both men are said to have been members of wealthy families. Each gave generously of himself and in goods to the poor.

Nicholas, we are told, dowered a poor man's three dowerless daughters anonymously. In the Dutch language he was called San Nicolaas. This was corrupted to San Nick Laws, or Santa Claus, by the uneducated burghers of New Amsterdam, which became New York.

Father Augustine D'Asti, O.F.F., pastor of old St. Vincent's Church, in Little Old Houston, from 1860 to 1866, spent his last years on this planet distributing gifts of food, clothes and money among the poor. But his biography is incomplete—partly because those years saw the beginning and end of that most tragic of our wars, the war that the United States fought against herself. Many of the local newspapers of that period are missing from the archives.

But here are some facts:

Father Augustine secretly gave away uncounted thousands of dollars' worth of gifts to the poor of Houston through a local trading post. The actual distribution was done by a man named John Kennedy, who was the father-in-law of William L. Foley, a pioneer Houston merchant.

John Kennedy's trading post stood on the northwest corner of Travis Street and Congress Avenue during the War Between the States. Later on Bill Foley founded a famous store there.

The historian Jesse Ziegler quotes Chief Mingo, sachem of the Alabama Indians, as calling John's whisky "strongest fire-water in Houston town." Ziegler says Mingo was well qualified to make that judgment. It is to John's credit that he cut his whisky with less bayou water than other traders.

But where did Augustine, himself vowed to the poverty of St. Francis, get the money for the gifts?

Some traditionalists assume that the rich members of St. Vincent's Church supplied it. But we must remember that the country was engaged in a terrible war. Food was scarce and costly. Flour was \$100 a barrel. The Confederate currency was sadly inflated before it became worthless. In 1862 John Kennedy's warehouse was so nearly empty that he leased it to the government.

Father Augustine is known to have blessed the flag that Dick Dowling and his Davis Guards carried to victory in the Battles

of Galveston and Sabine Pass. Undoubtedly he administered the comforts of religion to many a soldier and many a war-parted family.

He died in the spring of 1866 at the age of 39. The last Christmas that he saw, that of 1865, was far from merry in old Houston. The city was full of unemployed soldiers; the country was exhausted from four years of war; and the people were suffering from privations of many kinds.

Father Augustine's death came in March of the year following the Christmas of peace, and a newspaper noted that every store in town closed for the funeral. Only then did John Kennedy reveal that it was the little Italian-born Franciscan padre who had supplied the funds for six years of gift-giving at the Travis Street trading post.

Where had the money come from?

Well, Augustine had come

from a rich family back in the Piedmont district of Italy, where fine wines were made. The records showed that he had brought a large patrimony to the Franciscan order. But Houston remembered him begging money for his poor from the busy merchants of Greasy Row (lower Travis Street, so called because the merchants kept barrels of free axle grease sunk in the outer edges of the banquettes in front of their stores, with long-handled dippers handy).

It was not until 1953 that the members of the Third Order of St. Francis discovered the grave of Houston's own St. Nicholas. He had first been buried in St. Vincent's churchyard, on Franklin Avenue; then had been re-buried in St. Vincent's Cemetery, on Navigation Boulevard. The tertiaries finally found his last resting place in Holy Cross Cemetery, on North Main Street, and marked it with a suitable headstone.

— Sigman Byrd

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### Space News Of Five Years Ago

**November 29, 1961**—For the Mercury-Atlas 5 orbital mission, the Mercury astronauts were assigned as spacecraft communicators at six of the Mercury global network tracking stations.

Mercury-Atlas 5, the second and final orbital qualification of the spacecraft prior to manned flight, was launched from Cape Canaveral with Enos, a 37½-pound chimpanzee, aboard. Scheduled for three orbits, the spacecraft was returned to earth after two orbits due to failure of a roll reaction jet and to the overheating of an inverter in the electrical system. Both of these difficulties could have been corrected had an astronaut been aboard. The spacecraft was recovered 255 miles southeast of Bermuda by the USS *Stormes*. During the flight, the chimpanzee performed psychomotor duties and upon recovery was found to be in excellent physical condition. The flight was termed highly successful and the Mercury spacecraft well qualified to support manned orbital flight.

President Kennedy, after giving lengthy answer to a question at his regular press conference, was handed a note by his press secretary, which he read and then said: "This chimpanzee who is flying in space took off at 10:08. He reports that everything is perfect and working well."

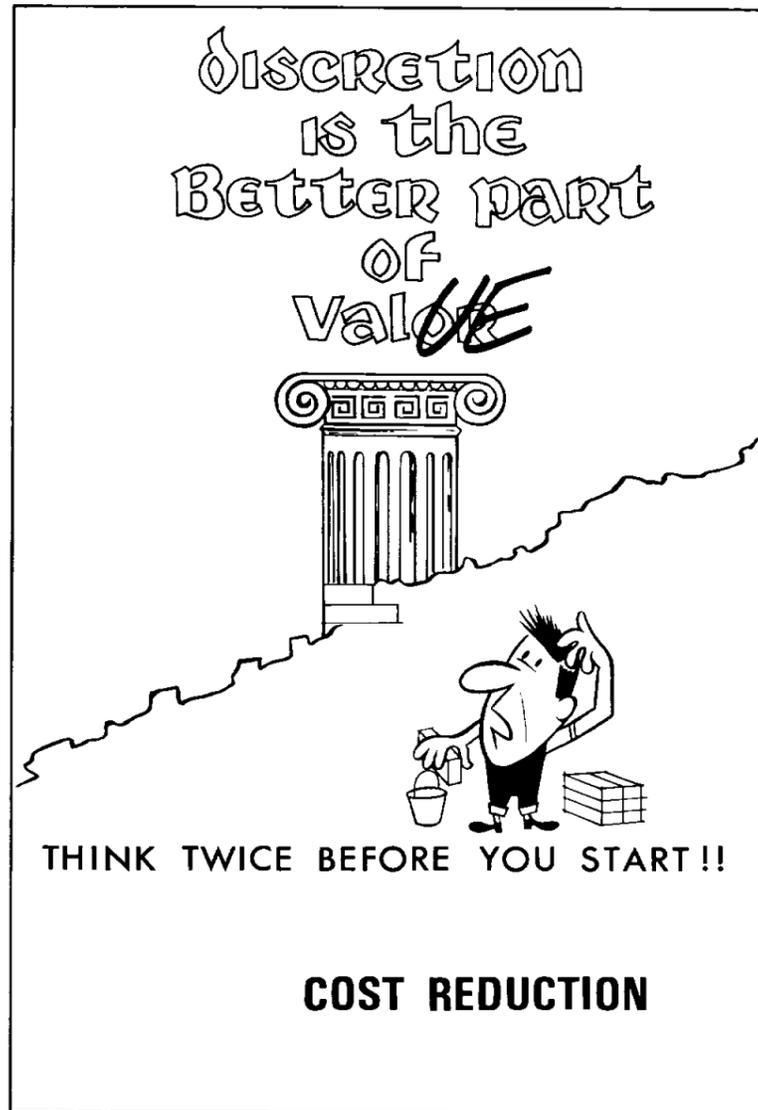
Astronaut John Glenn was selected as the pilot for the first manned orbital flight, with Scott Carpenter as backup pilot. Immediately, training was started to ready these two astronauts for the mission. The five remaining astronauts concentrated their efforts on various engineering and operational groups of the Manned Spacecraft Center in preparation for the mission.

Soviet cosmonaut Gagarin in New Delhi said that "we will not have to wait long" for the first manned flight to the moon. Gagarin was making a 9-day visit to India.

**November 30, 1961**—Atlas launch vehicle 109-D was delivered to Cape Canaveral for the Mercury-Atlas 6 first manned orbital mission.

**December 4, 1961**—Reported from Cape Canaveral that Astronaut John H. Glenn, Jr. had moved into "ready room" quarters. NASA had made no announcement whether a man would ride in the next Mercury capsule.

**December 6, 1961**—The first Project Mercury manned orbital flight, MA-6, was scheduled by NASA for early in 1962 after analysis of the date from the MA-5 chimpanzee orbital flight indicated that the Mercury-Atlas system and the tracking network were ready for manned orbital flight.



### Saturn V Contract Modified

A \$4.5 million contract modification for design and procurement of structural components and instrumentation of Saturn V first stages has been awarded to the Boeing Co.

The stages are built at the NASA Michoud Assembly Facility. The components have been previously provided by the Government. They include propellant ducts and valves and pressurization switches and gauges.

Michoud, a division of NASA's George C. Marshall Space Flight Center, is the manufacturing site for the Up-rated Saturn I first stages as well as the Saturn V stage. Both rockets are designed for use in the Apollo program.

The agreement increases Boeing's contract value to more than \$855 million.

### Anytime is Right For Suggestions

Some people have been heard to remark, "If I were boss, I sure would change that procedure." Just about everyone can think of a more efficient method, a better way to get the job done.

No one has a corner on efficiency. Whatever you are doing, it is likely there's a better way. Back off and take a good look. Then ask yourself some questions. Is every step necessary? Can we combine, eliminate or substitute?

You will probably see a need for many improvements in and around your own job, because this is what you are most familiar with. But don't stop there. If you spot safety hazards or other areas needing improvements outside your job, fill out MSC Form 624. Join the effort to save time, materials, improve safety and do your part to get the most out of every tax dollar used at MSC.

When to suggest? Anytime, starting with today!



**CONCERT SOLOISTS**—Bay Area Chorus soloists who will be featured in the Chorus' Christmas Concert December 11 in the MSC Auditorium are shown with Chorus president Mrs. Russell Schweikart, seated left. Mrs. L. C. Bennett, soprano, seated right, is Chorus vice president. Standing are Mrs. A. C. Bond, soprano, Mrs. Thomas R. Kloves, soprano, Mrs. Raymond E. Hodgkinson, soprano are Jim Bell, tenor, of KMSC-FM and Chris Goetzen, bass of Clear Creek high school.



**VOICES IN SYNC**—Members of the Bay Area Chorus rehearse the Christmas Concert under the direction of Paul Ofield. About half of the Chorus is made up of MSC and contractor employees.

## Roundup Swap-Shop

(Deadline for classified ads is the Friday preceding Roundup publication date. Ads received after the deadline will be run in the next following issue. Send ads in writing to Roundup Editor, AP3. Ads will not be repeated unless requested. Use name and home telephone number.)

### FOR SALE—HOUSES

3-bdr 1½-bath brick near Gulf Fwy/Alameda-Genoa, large kitchen, dining room, living room, built-in elec kitchen, central air/heat, 2-car garage, patio, fenced, close to school. Equity \$1500; \$106/mo incl taxes/ins. Ken Robertson, HU 4-5069.

4 bdr, 2-bath brick, 2-car atchd garage, central air/heat, paneled dining/family room, built-in kitchen, atchd utility room, patio. \$2,000 equity, assume \$142/mo payments (PITI). Earl Rubenstein, 932-4798.

### FOR SALE—AUTOS

1965 Chevy Caprice, air, pwr steering/brakes/seats, dark blue, in warranty, like new, 17,000 miles. \$2600. M. R. Franklin, MI 4-0853.

1963 Chevy 9-passenger station wagon, stick-6, fine condition. \$1100. R. J. Gillen, 877-1666.

1959 Oldsmobile Super 88 4-door sedan, silver grey and white, Double-Eagle tires, pwr brakes/steering, air, radio, runs well, all systems "Go." \$300. John Cotter, GR 2-5039.

1963 VW, AM radio, 42,000 miles, xcint condition. Paul A. Penzo, 591-2542.

1963 VW, sunroof, red w/white vinyl int, good wsw tires, 52,000 miles. \$800. R. H. Stanley, HU 4-6788.

1966 Mustang, 289 cu-in V-8, 3-spd floor shift, factory air, tinted glass, white walls, buckets, radio, heater, other extras. Will accept trade on a good used car. Coy Summers, MI 9-8838.

1965 Pontiac Catalina 6-pass station wagon, power, air, electronic ign, air lift shocks, antisipin differential. NADA avg retail, \$2725; will sell for \$2225. No trade. Chet McCollough, 966-2572 or HU 4-2970.

1966 Chevelle sports coupe, 8500 miles, air etc. Walt Cunningham, 591-2430.

1964 Chevrolet Impala super sport, all super sport equipment including bucket seats, Daytona blue w/light blue interior, 327-hp engine, power glide, power steering and power brakes, tilt steering wheel, factory air, tinted glass, AM-FM radio. W. G. Pratt, Kemah 877-2954.

1964 Falcon Future 2-door hardtop V-8, autoshift, factory air, radio, belts, vinyl int, tinted windshield, \$1250. Asa Yeamans, 658-3816.

1963 Corvette conv with 1965 body, 340-hp, 4-speed, racing green, AM/FM. \$2195. Noel Willis, MO 4-4877.

1966 Mustang, silver-blue, white vinyl top, air, automatic, 6-cyl, tinted glass, bucket seats, wire wheels, white walls, radio, other extras. \$2300. G. Shrum, 877-3109.

### FOR SALE—MISCELLANEOUS

Sears corral pool table, 3x4 feet, and accessories. \$50. W. S. Beckham, GR 1-0814.

16-ft custom deluxe Hollywood boat with 35-hp elec start Evinrude, top, side curtains, baitwell, big-wheel tilt trailer and outdoor storage cover, all in xcint condition. \$695. Wayne Gray, GR 4-2002.

1962 Cushman Truckster, 3-wheel scooter with enclosed cab and pickup box body. Best reasonable offer. Robert A. Vogt, HU 8-4069.

3-pc dark brown curved sectional sofa, two Travertine-topped end tables, one Travertine-topped large round cocktail table, two large lamps. The whole works for \$250. Gus Grissom, 877-2662.

Magnovox 23-in TV/AM-FM radio/stereo in early American cherry cabinet, 5 years old. Nothing works now, but all repairable. Originally \$700; will sell for best offer over \$50. Barbara Vickers, HU 5-2726.

35mm camera, f/2.8, shutter 1/200, \$15. Clarinet, new last summer, used one month, \$80. Telescope, 60mm with eyepieces for 15x, 30x, 45x, 60x, includes tripod, \$15. Set Childcraft encyclopedia, \$40. Jim Rippey, 877-1859.

Modern Craft sofa, \$50. Oiled walnut coffee table, \$25. Both xcint condition. Three Formica familyroom tables, \$15. 1½-ton RCA air-conditioner, \$75. Paul Jaschke, GR 1-4342.

Ricoh autozoom 8mm movie camera, Keystone projector, Acme Mov-E-Lites; originally over \$200. Sell to best offer over \$100. Arthur Berkowitz, MI 3-7773, 2415 Flowers Apt 24, Houston.

### WANTED

Two girl's 20-in or 24-in bikes in fair condition. Jim Blumentritt, 932-4220.

Car pool from SW Houston close to South Loop to MSC 8:30 to 5 shift. Karen Gerson, MO 5-2598.

Guitar instructor to teach in Friendswood. R. N. Townsend, HU 2-7720 after 6.

Used hi-power binoculars, 7x35. Stephen Jacobs, PR 4-9924.

Cape Cod Catboat with gaff-rig, 17-20-ft, aux engine, traditional construction—no sterile glass mass-produced floating bathtub. Terry White, 932-4472.

Car pool or will pay from 2607 Cedar Drive, La Marque to Bldg 419, 7:30 a.m. to 4 p.m., Evelyn Villeneuve WE 5-3878.

### FOR RENT

2-bdr unfurn duplex in Clear Lake City, washer/dryer connects, fenced yard, 1½-bath, attached garage. \$195/mo, all utilities paid. T. M. Macfarlane, HU 8-2493.

## Fine Arts Ass'n Forms Theater, Kids' Chorus

The Bay Area Fine Arts Association's amateur theater group. Theater on the Bay, recently elected officers and adopted by-laws and plans to present its first play within three months. Dale Rains, director of drama at LaPorte high school, is managing director for the group.

Persons interested in taking part in the Theater on the Bay productions in any capacity—set design, directing, acting—should contact Mrs. S. F. Leslie at GL 1-1477.

BAFA has also formed a children's chorus for youngsters in grades 4 to 6. The chorus will present a community carol-sing December 18 from 5 to 7 pm in the Sylvan Beach Pavilion in LaPorte. MSC employees interested in having their children take part in the chorus should call Mrs. Andrew Yiannias at GR 1-4388.

## Bay Chorus to Present Tree-Lighting Program

Christmas music ranging from Bach to traditional and contemporary carols will be presented December 11 by the Bay Area Chorus as a prelude to the community Tree Lighting Ceremony at the Third Street MSC gate.

The Bay Area Chorus composed of 60 people, more than half of whom are MSC or con-

tractor employees, will be accompanied by a 30-piece orchestra. Paul Ofield is director of the Chorus. He is music director of Robert E. Lee high school in Houston, conductor of The Singing Boys of Houston, and minister of music at Bethany Methodist Church in Houston.

The program is scheduled to begin at 5 pm.

### Part I

- Break Forth, O Beauteous, Heavenly Light* ..... J. S. Bach  
Chorale from "The Christmas Oratorio"
- O Jesus, Grant Me Hope and Comfort* ..... J. W. Franck
- Ah, Lord God, The World's Creator* ..... J. G. Ebeling  
Arranged by J. Roff
- Glory to God in the Highest* ..... G. B. Pergolesi  
Carol Kloves, soprano Jim Bone, tenor  
Norma Hayes, alto Chris Goetzen, bass
- I Wonder As I Wander* ..... arranged by John Jacob Niles  
Almeta Bennett, soprano
- How Joyful Are the Tidings* ..... arranged by David Stanley Smith
- Hush, O Heaven* ..... arranged by David Stanley Smith
- Lay Down Your Staffs, O Shepherds* ..... arranged by Franz Wasner
- Carol of the Questioning Child* ..... Richard Kountz  
Shirley Hodgkinson, soprano  
Carol Kloves, soprano
- E'en So, Lord Jesus, Quickly Come* ..... Paul O. Manz
- Carol-Noel* ..... Peter J. Wilhousky

### Part II

- 'Twas the Night Before Christmas* ..... words by Clement Clark Moore.  
Jim Bell, tenor music by Ken Darby
- Do You Hear What I Hear* ..... Noel Regney and Gloria Shayne
- Gloria in Excelsis* ..... Martin Luther, music by Florence Jolley
- And the Glory of the Lord*, chorus from the "Messiah" ..... G. F. Handel
- Hallelujah*, chorus from the "Messiah" ..... G. F. Handel

## MSC BOWLING ROUNDUP

Mimosa Men's League  
Standings as of November 21

TEAM	WON	LOST
Whirlwinds	33	15
Road Runners	30	18
Technics	27	21
Fabricators	26	22
Strikers	25	23
Chizzlers	24½	23½
Alley Oops	23½	24½
Foul Five	22	26
Weightless Wonders	21	27
Real Timers	20	28
Agitators	20	28
Hustlers	16	32

## Cage Captains to Meet

Team captains for the upcoming MSC Basketball League are urged to attend the December 6 meeting at the Ellington AFB NCO Club at 7 pm. Schedules for play to begin December 19 will posted at the meeting. So far, 14 teams have been entered in the League and more than 20 teams are expected by the time league play begins.

**BUY U.S. SAVINGS BONDS**  
NOW PAYING 4.15%  
WHEN HELD TO MATURITY

## Two Pairs Tied In Bridge Open

Paul Nielson and Art Manson tied with Leona Kempainen and Ray Dickerson for the MSC Duplicate Bridge Club Open Pair Championship. Pete Van der Meyden and Mitch Rubin led the field of twenty-five pairs at the first session on November 1, but failed to place in the final session on November 8. Third place overall went to Charlie Brown and Bud Parschall. North-South winners at the November 15 game were Edith Reid and D. Leighton, first; Mary Scott and Wanda Wallingford, second. Paul Swanzy and Mark Powell were first, East-West, and T. K. Sulmeisters and R. Willoughby, second. The regular Club Master Point will be held November 29.

## 1966 MSC/EAFB Flag Football League

Standings as of November 18

American Division			National Division		
TEAM	WON	LOST	TEAM	WON	LOST
IESD	7	0	Philco/WDL	8	0
FSD	7	1	US Coast Guard	8	0
CAD	6	1	IBM	5	2
MPAD-GP	6	1	SMD	4	3
Lockheed	5	2	TRW	4	3
Grumman	3	5	747th	3	4
P&PD Hustlers	2	5	SSD	2	5
2578th	2	5	FCD	2	5
Link	1	6	MPAD-Flt Sim	2	5
ANG	1	7	NAA	1	6
Philco Tech Reps	0	7	P&PD	1	7

## Bobbi Ebner Goes To Co-Op Meet At Georgia Tech

Barbara Jo Ebner, Cooperative Education Coordinator in the Employee Development Branch of Personnel Division, took part in a panel discussion on the Co-op program at Georgia Institute of Technology November 5.

The panel consisted of Georgia Tech alumni, area Co-ops, including one MSC Co-op Woody Vogt of Georgia Tech, and regular students.

Hurry, Hurry! Step Right Up . . .

...★◀ MATHÉWS-KRAFT ▶...★...

# FLYING GURUS

TO THE INFORMATIVE, BURNING COMMENTARY BY GUS GRIBSON & JOHN YOUNG

**FRILLS**  
SEE BARON MANFRED VON SCHIRRA BRUSH WINGTIPS WITH THE GEMINI 7 MACHINE... SEE THE DARING WING-WALKERS - ED WHITE, GENE CERNAN, DICK GORDON & BUZZ ALDRIN... SEE TOM STAFFORD SPIN HIS PROP - AGAIN & AGAIN & AGAIN & AGAIN... SEE GORDO COOPER & PETE CONRAD FLY THROUGH A BILLBOARD.

SEE Jim McDivitt land his machine blindfolded (without a compass).  
SEE Tom Stafford in a realistic dogfight with the "angry alligator".  
SEE Frank Borman & Jim Lovell remain aloft for hours of a time.

**EDGE OF SHIFT**

**DANGER**

DON'T MISS!  
NEW ARABSTRONG & DAVE SCOTT DO AN OUTSIDE LOOP, SPLIT-S, BARREL ROLL & CUBAN-8... SIMULTANEOUSLY...  
PETE CONRAD & DICK GORDON ZOOM TO ALTITUDES NEVER REACHED BEFORE BY MAN.

SHADES OF BARNSTORMING DAYS—George Alexander of Aviation Week & Space Technology's Cape Kennedy Bureau in collaboration with McDonnell Aircraft Company artist Phil Benson produced this circus-poster summation of the Gemini program presented to Gemini Program Office Manager Charles W. Mathews at the Gemini XII prelaunch press conference.

### Gemini Awards (Continued from Page 1)

Richard J. Allen, NASA Hq., LeRoy E. Day, Hq., John A. Edwards, Hq., Eldon W. Hall, Hq., Vearl N. Huff, Hq., William A. Summerfelt, Hq., and Anthony L. Liccardi.

MSC employees receiving the NASA Superior Achievement Award were: F. J. Bailey, R. R. Carley, H. E. Clements, D. R. Collins, H. W. Dotts, W. H. Gray, A. Hobokan, R. S. Johnston, W. J. Kapryan, Eugene Kranz, J. P. Mayer, A. J. Meyer, W. B. Mitchell, W. J. North, P. O. Piland, J. Roberts, S. H. Simpkinson, S. A. Sjoberg and H. W. Tindall.

## Planetary Chute Experiment Fails At White Sands

The first of 10 planned rocket-launched tests of a subscale parachute system designed to provide information on ways to land instrumented capsules on Mars failed when the parachute ejection system did not eject.

The test at White Sands Missile Range, N. M., was the second in a NASA research program to study different parachute designs and techniques for possible use in the proposed Voyager program to explore the planets.

An earlier test, launched by a balloon over White Sands in August with a near full scale spacecraft and parachute system, was completely successful.

NASA engineers reported the first phase of the test last Saturday. November 5 went as planned and the two-stage Honest John-Nike rocket carried the 200-lb. experimental package to an altitude of 104,000 feet.

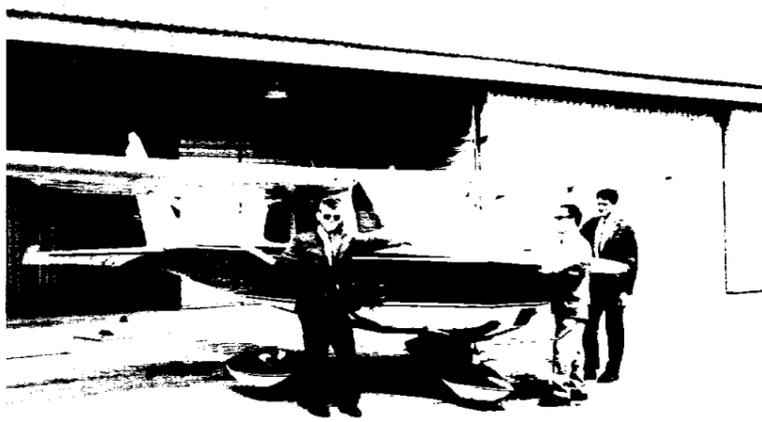
Following separation of the payload from the second stage, an explosive charge activated by a radio signal from the ground, was programmed to eject the parachute system and the five foot long camera-loaded package to land lightly in the desert. However, a faulty ground signal failed to trigger the ejection.

The planetary entry parachute program is directed by NASA's Office of Advanced Research and Technology and is managed by the Langley Research Center, Hampton, Va.

Nine more sub-scale rocket launches and four full-scale balloon flights are planned in the test series.



## SECOND FRONT PAGE



FLIGHT READINESS REVIEW—Members of the Aero Club, Inc. check the oil sump level and kick the tires on the Club's Cessna 172 prior to flight from Spaceland Air Park, League City. Left to right are Vice President Jim Donnell, President Don Bray and Training Officer Sal Tripoli.

## Aero Club Buys Cessna 150, Offers AOPA Flight Course

The Aero Club, Inc. recently added to its curriculum the Aircraft Owners and Pilots Association's 360-Degree Course to supplement the Club's Sander-son Private Pilot's Course. Both

courses are offered each Tuesday at 5:15 pm in the MSC News Center.

A Cessna 150 was recently bought by the Club as a companion airplane to the Cessna 172 already owned by the Club. The Club is studying the possibility of buying a third aircraft with higher performance and retractable landing gear.

Aero Club members comprise the Space Flight of the Civil Air Patrol and fly a Beech T-34, a Ryan PT-22 and a glider. The Flight has requested that an L-16 be assigned to the group.

The Aero Club meets the second Tuesday of each month at 5:15 pm in the MSC News Center. Further information about membership or scheduling flights in the Club aircraft can be obtained from Aero Club President Don Bray at 4766, or from Secretary and Information Officer John Vincze at 4041.

## Houston Pastors To Speak at Advent Services

Non-denominational Advent services will be held each Wednesday morning in the auditorium beginning November 30 and ending December 21. Slanted toward the relationship of Christmas to a fast-moving space age, the services will begin at 8 am and will end by 8:25 am.

Among the speakers for the four Advent services will be Father Joseph Christensen of Sacred Heart Co-Cathedral, Houston, whose topic will be "Christmas: Past Event or Present Force?"; the Very Rev. Robert T. Gibson, dean of Christ Church Episcopal Cathedral, Houston, and Dr. Alfred H. Freeman, senior pastor of St. Paul's Methodist Church, Houston.

Laymen from Clear Lake area churches who are MSC employees will conduct the services and introduce the speakers. Rev. Robert Engstrom, pastor of the House of Prayer Lutheran Church in Clear Lake City is making the arrangements for guest speakers.

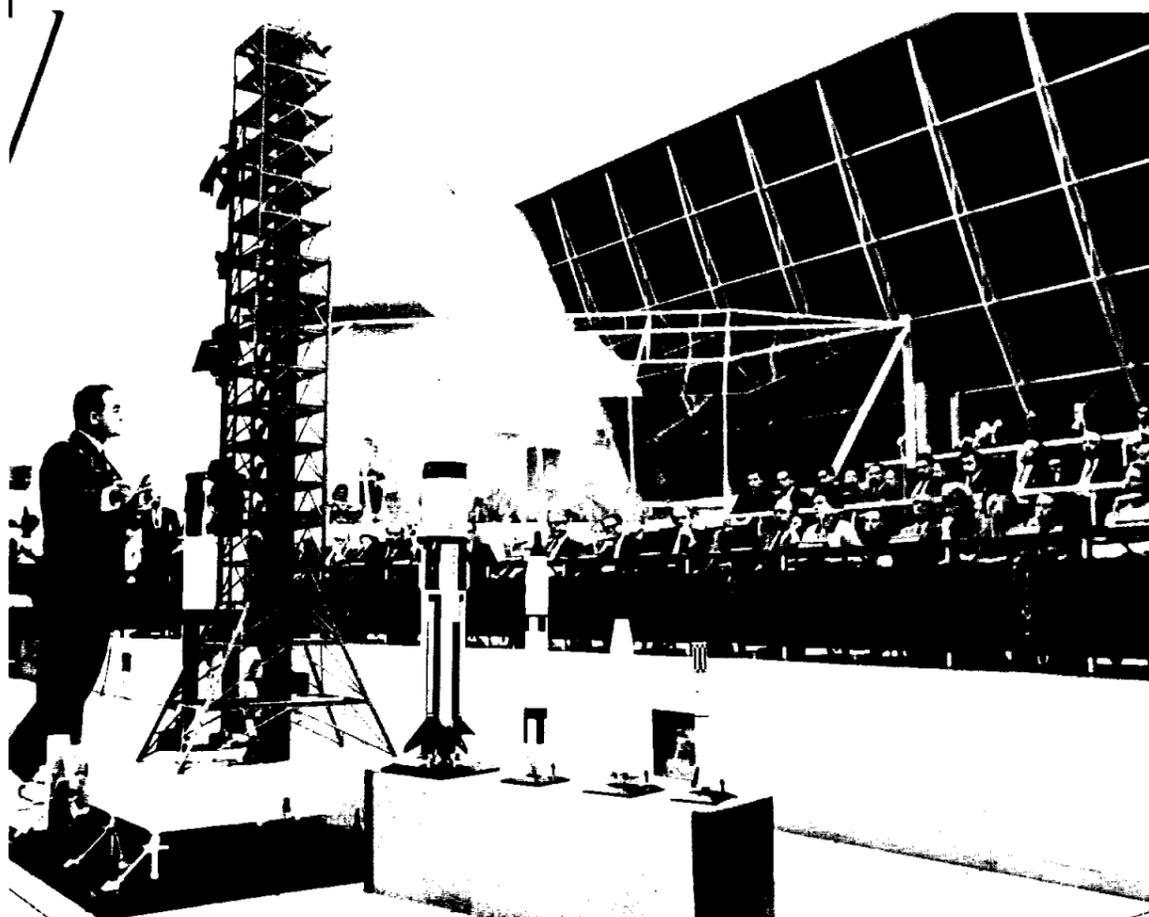
"We are hopeful," said Reverend Engstrom, "that MSC employees will take the opportunity to hear these men, whatever their own views are about Christmas. These are some of the outstanding men from Houston churches."

### Co-Op of Month



COST ANALYST—Howard L. Renfro, math major at Lamar Institute of Technology, is a co-op employee in the Office of Planning and Cost Support of the Advanced Spacecraft Technology Division. During his MSC work cycle Renfro inputs a cost computer program and interprets its results.

## UN Space Use Committee Briefing



DISTINGUISHED GUESTS—Members of the United Nations Committee on the Peaceful Uses of Outer Space November 11 were briefed on the Apollo program by KSC Director of Launch Operations Rocco Petrone in the Launch Control Center for Launch Complex 39. The UN delegation also witnessed the launch of Gemini XII and the Atlas/Agna rendezvous vehicle during their visit to Kennedy Space Center.